Installation and Operation Manual

AllSync Plus® Clocks

american time®

Integrated Solutions

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Safety Instructions

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All wiring to AllSync Plus clock(s) and Master must be installed by qualified persons in conformance with applicable national and local electrical codes. Improper installation of this equipment can result in lethal electrical shock and fire.

Disconnect and lock out electrical power to AC clocks before wiring.

There are no user serviceable parts inside AllSync Plus clocks.

The AllSync Plus clock(s) should be installed in a location protected from:

- Water, including condensation
- Physical damage

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Introduction

The AllSync Plus Clock Manual explains how to install AllSync Plus Clocks and understand their operation.

The American Time AllSync Plus clock is the second generation of the AllSync Chameleon clock. The AllSync Plus clock incorporates all of the first generation AllSync clock features with improved accuracy and 15 minutes of reserve power for short power outages.

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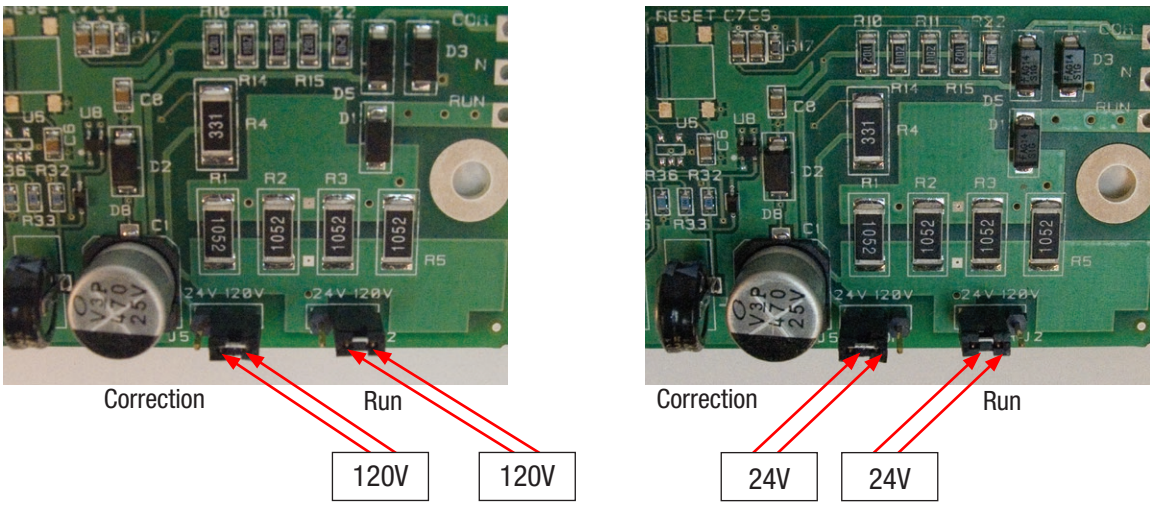
Electrical Connections

Warning:
To prevent electrical shock, do not apply electrical power to master, clock relays and clock wiring before completing all wiring connections.

The AllSync Plus clock can run off either 24vac/60 Hz or 120vac/60 Hz. To change between the two different supply voltages two jumpers must be set inside each clock. This setting is completed by American Time when your clock(s) are built according to the part number ordered.



Caution:
Setting the AllSync Plus clock for 24vac and powering it with 120vac will damage the circuit board.

Red wire = Correction
Black wire = Run
White wire = Neutral
Green wire = Ground

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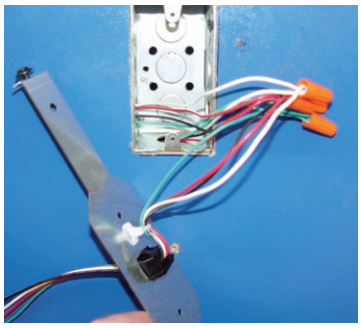
Plastic Surface Mount Clock Installation

Warning:
The AllSync Plus plastic surface mount clock should be mounted according to these instructions to meet UL clock listing.

1. Remove the AllSync Plus clock, mounting bracket, and wiring harness (if applicable) from the packaging.



2. Using UL approved wire nuts, make connections between flying leads and wiring inside electrical box.

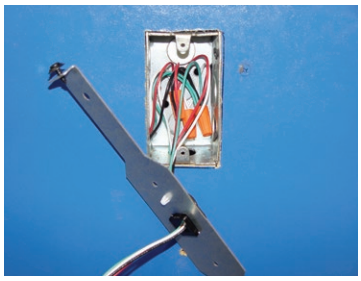
a. Black wire should be connected to hot (run) wire from the master.

b. Red wire should be connected to the correction line from the master clock.

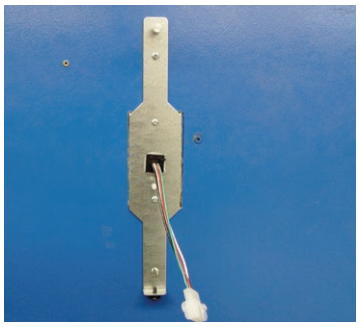
c. White wire should be connected to the neutral line.

d. Green wire should be connected to earth ground.

Note: All wiring connections should be made in accordance to local and national electrical codes.



3. Bundle all wall wiring and female connector wiring inside back box and place mounting bracket over back box opening.



4. Attach mounting bracket to back box and wall, ribbed post up.
5. Secure bracket to wall using appropriate mounting screw and anchor for wall material. Screw and anchor are not included.

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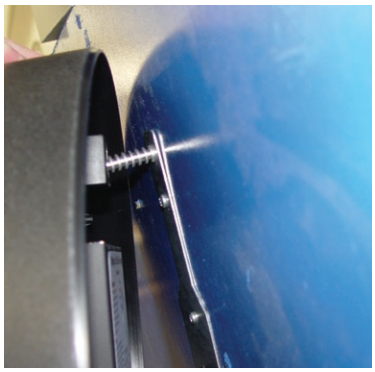
Plastic Surface Mount Clock Installation (cont)

6. Make connection between clock and wall wiring using attached four conductor mating connectors.
7. Bundle wires inside clock bezel.



8. Slide keyhole hanger over ribbed hanging stem on mounting bracket

9. Screw bottom portion of clock to mounting bracket

Note: Screw bottom portion of the clock to the point the screw bottoms out. Do not over tighten.

Caution:
Over tightening may damage clock bezel. If the clock bezel begins to deform, cease tightening.

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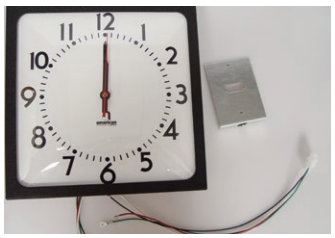
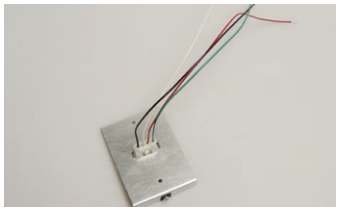
Metal Surface Mount Clock Installation

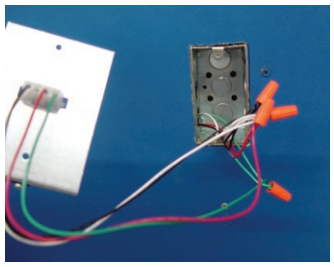
Warning: The AllSync Plus metal surface mount clock should be mounted according to these instructions to meet UL clock listing.



1. Remove the AllSync Plus clock, mounting bracket, and wiring harness (if applicable) from the packaging.

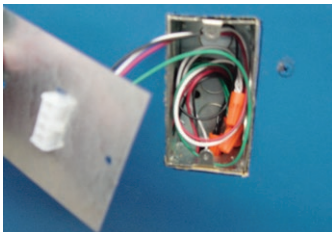


2. Snap female (wall half) connector into mounting bracket.



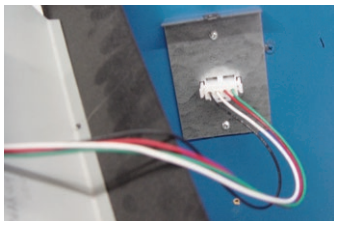
3. Using UL approved wire nuts, make connections between flying leads and wiring inside electrical box.
   a. Black wire should be connected to hot (run) wire from the master.
   b. Red wire should be connected to the correction line from the master clock.
   c. White wire should be connected to the neutral line.
   d. Green wire should be connected to earth ground.

Note: All wiring connections should be made in accordance to local and national electrical codes.

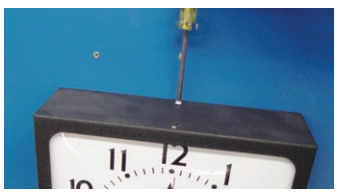


4. Bundle all wall wiring and female connector wiring inside back box and place mounting bracket over back box opening, bent side up.

5. Screw mounting bracket to electrical box.



6. Connect clock wiring using connector attached to clock.



7. Hang clock on mounting bracket and secure using screw through the top of the clock.

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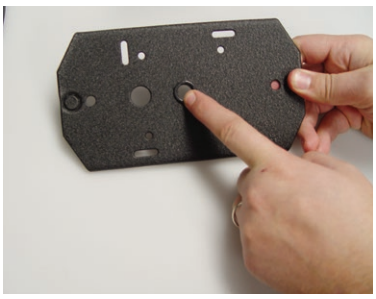
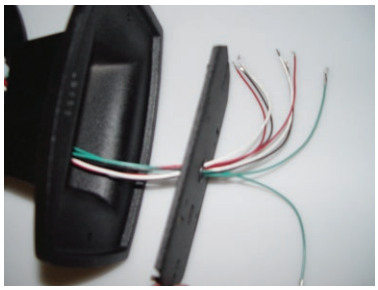
Metal Round Double Dial Clock Installation

Warning:
The AllSync Plus metal double dial clock should be mounted according to these instructions to meet UL clock listing.

1. Remove the AllSync Plus clocks, double dial ring, wiring harnesses, backbox plate and plastic bushings from the packaging.



2. Insert plastic bushing into box plate to protect wires



3. Thread back box wire harnesses through double dial ring base and box plate.

4. Insert 1 1/2" screws into either side of double dial ring. Thread both screws half way through ring using same threaded hole.

Note: ceiling mount screw location should be directly above ring base and wall mount screw location should be 90 degrees from base. (Wall mount shown).

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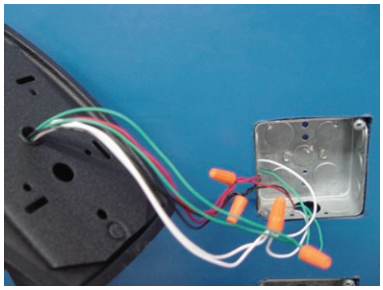
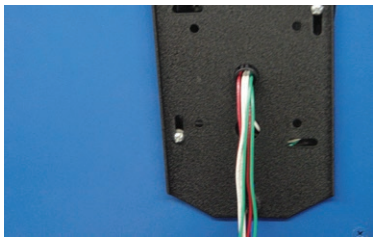
5. Attach mounting clips by threading the 1¼" screws included through them in each of the three positions. Do not completely tighten, they should be loose at this point.

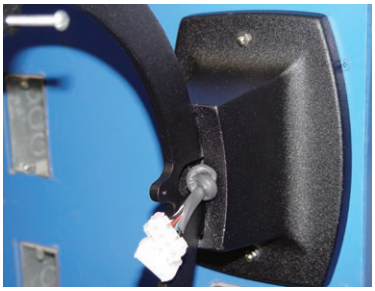


6. Using UL approved wire nuts, make connections between flying leads and wiring inside electrical box.
    a. Black wire should be connected to hot (run) wire from the master.
    b. Red wire should be connected to the correction line from the master clock.
    c. White wire should be connected to the neutral line.
    d. Green wire should be connected to earth ground.

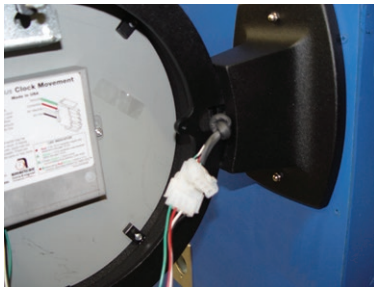
Note: All wiring connections should be made in accordance to local and national electrical codes



7. Attach box plate to electrical box.



8. Attach double dial ring to box plate using acorn style nuts.



9. Hang one side of the double dial clock on mounting ring using protruding screw and connect clock wires to one of the wall ends.

Note: The knot in the wall side wire harness may block clock installation. By simply pulling it away from ring base about half an inch will provide adequate space to install both clock sides.

10. Connect remaining side of double dial clock to remaining wire harness wall end and hang on remaining screw.
11. Tighten mounting clips installed in step 5 to firmly secure both side of double dial clock.

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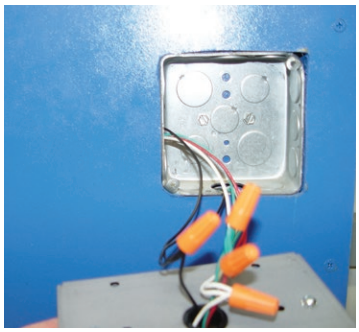
Plastic Double Dial Clock Installation

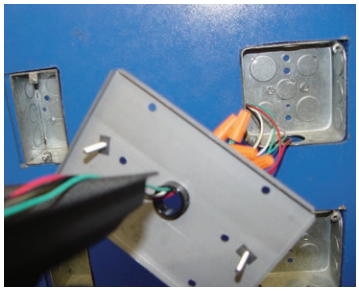
Warning:
The AllSync Plus plastic double dial clock should be mounted according to these instructions to meet UL clock listing.

1. Remove the AllSync Plus plastic double dial clock from packaging.

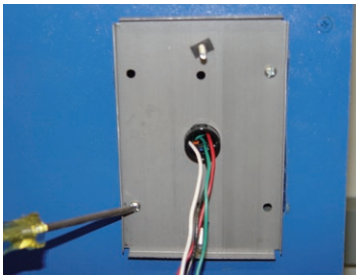


2. Using UL approved wire nuts, make connections between flying leads and wiring inside electrical box.
    a. Black wire should be connected to hot (run) wire from the master.
    b. Red wire should be connected to the correction line from the master clock.
    c. White wire should be connected to the neutral line.
    d. Green wire should be connected to earth ground.

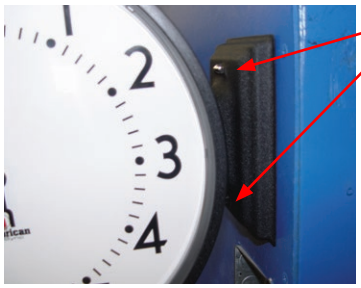
Note: All wiring connections should be made in accordance to local and national electrical codes



3. Remove box plate from double dial clock by removing acorn nuts at base of clock.
4. Bundle wires inside electrical box.



5. Attach box plate to electrical box.



6. Connect clock to box plate using acorn nuts removed in step 3.

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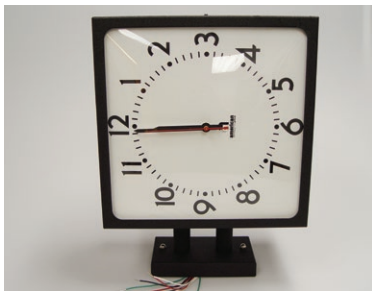
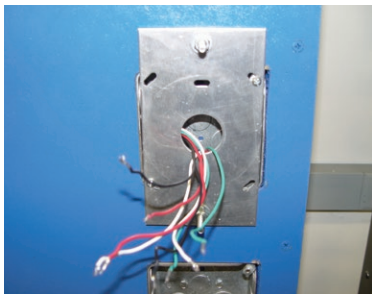
Metal Square Double Dial Clock Installation

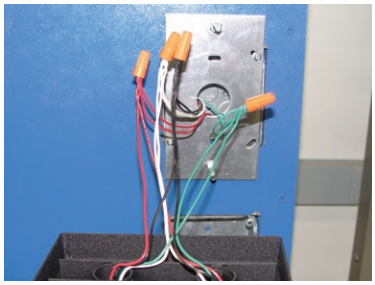
Warning:
The AllSync Plus metal square double dial clock should be mounted according to these instructions to meet UL clock listing.



1. Remove the AllSync Plus square metal double dial clock from packaging.

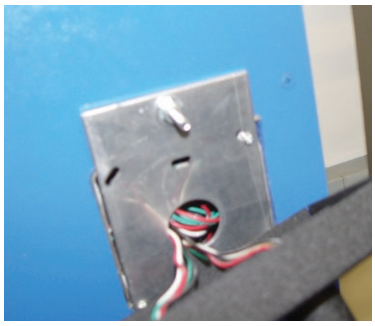


2. Remove box plate from clock by removing acorn nuts at the base of the clock. Pull wall wiring through plate hole and attach to electrical box.

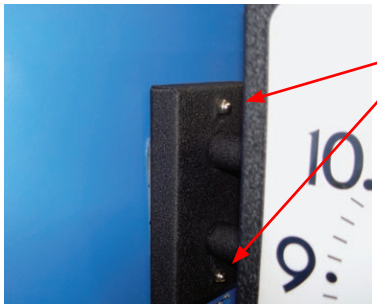


3. Using UL approved wire nuts, make connections between flying leads and wiring inside back box.
    a. Black wire should be connected to hot (run) wire from the master.
    b. Red wire should be connected to the correction line from the master clock.
    c. White wire should be connected to the neutral line.
    d. Green wire should be connected to earth ground.

Note: All wiring connections should be made in accordance to local and national electrical codes



4. Bundle wires inside electrical box.



5. Connect clock to box plate using acorn nuts removed in step 2.

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AllSync Plus Startup Routine

LED location on back of clock

The AllSync Plus clocks operate differently from their fixed clock protocol mechanical counterparts and from the older AllSync clocks.

After power is initially supplied to the AllSync Plus clock run line the following will occur:

1. The clock will charge its internal backup power cell and undergo startup diagnostics.

Note: This may take from 1-9 minutes. During this charge period the clock will run through the start up diagnostics indicated by the LED on the back of the clock and the clock hands will remain still.

2. The second hand will begin slow stepping (moving 1 second on the clock face for every 3 seconds real time).

Note: This stage will last for approximately 3 minutes. While the second hand is slowly stepping the LED on the back will flash green. The green flashing LED indicates the microprocessor is telling the movement what time it is. The default time for the circuit board is 12:50. This is the time the movement receives on startup and after extended power outages (greater than 15-20 minutes).

3. The clock will rapidly advance and the LED will turn solid red.

Note: The solid red LED indicates the clock circuit board has not received a 12 hour correction.

4. The clock will stop rapid advancement sometime between 12:50 and 1:15 as seen on the clock face and begin running at the correct pace (1 tick per second).

Note: The rapid advancement of the hands may pause periodically for the clock to find its position. Rapid advancement will continue shortly after the clock has completed its location check.

Note: Rapid advancement may last as long as 15 minutes. Total rapid advancement time depends on hand location prior to startup.

5. When the time on the clock face reaches approximately 2:02, the clock hands will rapidly advance to match the minutes on the master clock connected to it.

Note: If a master does not send a valid correction, the AllSync Plus clock cannot synchronize its minutes to the master.

Note: The minute and second hands will be on time with the master after this rapid correction.

6. Approximately 5 minutes after the conclusion of the first 12 hour correction from the connected master the AllSync Plus clock will rapidly advance to match the exact time on of the master (hour hand will correct).

Note: The AllSync Plus clock is set up at the factory for clock code 01 (xx:57:54 – 8 second hourly correction, 5:57:54 – 14 second 12 hour correction). If running a different clock protocol, the AllSync Plus clock may require an additional 12 hour correction to recognize the different clock protocol. If this is the case, allow 24 hours for the clock to synchronize.

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User Notes

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AllSync Plus accuracy

The AllSync Plus movement continually makes adjustments to its own internal clock. With each correction received from your master clock it will make an adjustment to match the time on the master. For this reason, the longer the AllSync clock is connected to your master the closer it will get to your master's time. After approximately 2 days the AllSync Plus clock should be ±1 second to the master system clock.

Movement corrections

The AllSync Plus clock has two primary yet completely separate parts: the circuit board and the movement. The circuit board listens to your master and tells your movement, when asked, the time in its own language. The movement will ask for the time 4 times a day at 2am, 8am 2pm and 8pm. For this reason if your master time is changed, the AllSync Plus clock will not correct until it has both received a correction from the master and reached one of its four daily correction times.

Note: The AllSync Plus clock(s) starts its internal clock at 12:50 when power has been removed from it by more than about 25 minutes.

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Start Up Example Operation:

Note: This is an example of how the AllSync Plus clock will operate with an ATS master running clock code 01 and actual (master) plug in time at 9 am.

Timeline	Actual Time (Master Time)	Clock Microcontroller	Time shown on clock	Description
0 minutes	9:00 :00 AM WED FEB 07, 2007	12:50		Power is applied to clock at 9 am actual time with the clock displaying 3 o'clock. The clock microcontroller starts counting at 12:50.
25 minutes	9:25 :00 AM WED FEB 07, 2007	1:15		25 minutes after power has been applied clock face matches microcontroller time.
1 hour	10:00 :00 AM WED FEB 07, 2007	2:00		Microcontroller updates its time using an hourly correction from master clock.
1 hour 10 minutes	10:10 :00 AM WED FEB 07, 2007	2:10		Clock movement requests time from microcontroller.
1.5 hours	10:30 :00 AM WED FEB 07, 2007	2:30		Clock movement synchronizes with clock microcontroller.
9 hours 1 minute	6:01 :00 PM WED FEB 07, 2007	6:01		Master clock sends a 12 hour correction out shortly before 6 o'clock. The microcontroller resets clock movement. Clock movement requests the time.
9.5 hours	6:30 :00 PM WED FEB 07, 2007	6:30		Clock movement has finished fast correction and is now on time with the master.

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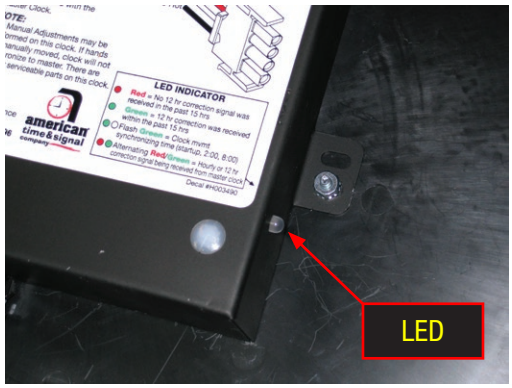

Note: The LED indicator on the back of the AllSync Plus clock is intended for troubleshooting purposes.

AllSync Plus Clock not correcting the hour hand

- LED is solid green
  - Wait for 8:00 or 2:00 on clock face
  - Disconnect clock for 1 hour, reconnect and wait for 24 hours.
- LED is solid red
  - Wait for 12 hour correction

Note: LED on back of clock will alternate red-green while master is sending it a correction.

  - If AllSync Plus clock(s) have been moved from one clock protocol to another with identical hourly correction it may not recognize the switch. Set master for synchronous style correction with different hourly correction, then, if needed change clock protocol back (refer to your master clock instructions for setting clock protocol).

AllSync Plus Clock Synchronized to the correct hour and seconds but minutes are off by less than

- LED is green
  - Wait for 8:00 or 2:00 on clock face

Note: LED on back of clock will alternate red-green while master is sending it a correction.

  - Clock may have been jarred during shipment. Remove crystal and move the minute hand to the correct time. Contact American Time Technical support for assistance at **800-328-8996**.
- LED is red
  - Wait for 12 hour correction and clock to cross 8:00 or 2:00
  - If AllSync Plus clock has been moved from one clock protocol to another with identical hourly correction it may not recognize the switch. Set master for synchronous style correction with different hourly correction, then if needed, change clock protocol back. Refer to your master clock instructions for setting clock protocol.

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Troubleshooting

AllSync Plus Clock not running with power applied

- LED not lit
  - o Verify master clock is wired and operating correctly
  - o Verify wiring to clock (check voltage using voltmeter)
  - o Contact American Time Technical support at **800-328-8996**

Note: You may damage clock by changing power supply settings to 24vac and applying 120vac.

- LED lit

  - o Wait for 30 minutes. The AllSync Plus clock requires a short period (up to 15 minutes) to charge its backup power supply.
  - o Remove dust cover on the back of the clock and verify connection between circuit board and movement.

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AllSync Plus Clock Specifications

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Integrated Solutions

AllSync Plus®
Flush Metal Case

FEATURES

- **5 Year Warranty**
- Microprocessor controlled movement
- 15 minutes of backup power (no batteries required)
- Accuracy to within ±1 second of a master clock
- Reduced power consumption
- Attractive modern design
- Heavy-duty construction
- All metal case
- Diagnostic LED

DESCRIPTION

The **american time**™ AllSync Plus clocks are provided in round or square metal cases with glass crystals and bold, black numerals and minute markers on a non-yellowing white dial. Stylish hour and minute hands are aluminum with a black finish and a red sweep second hand.

AllSync Plus clocks are designed to work with multiple master clocks and correction signals. This unit is programmed to identify the signal it receives from the master and operate as that style of clock. Changing clock operation from one style to another is as easy as unplugging the clock from one system and plugging it into another. If needed, changing the placement of 2 small jumpers on the circuit board can change the voltage required to run this clock from 120vac to 24vac or 24vac to 120vac. This clock provides 15 minutes of backup run power without the use of batteries. If a power outage should last longer than 15 minutes, the clock will synchronize to the master clock at the hourly and 12 hour correction cycles.

Correction Signals

Works on:

- Hourly correction: 7-9 seconds starting at the 57th minute and 54th second. 12 hour correction: 13-18 seconds starting at 5:57:54 (am and pm).
- Hourly correction: 24-28.5 seconds starting at the 0 minute and 0 second. 12 hour correction: 24-32 minutes starting at 6:00:00 (am and pm).
- *Hourly correction: 54-56 seconds starting at the 58th minute and 5th second. 12 hour correction: 10 pulses of 94-96 seconds starting at 5:05:00 (am and pm) and repeating every 2 minutes.
- Hourly correction: 24-26 seconds starting at 0 minute and 0 second. 12 hour correction: 25 pulses of 24-26 seconds starting at 6:00:00 (am and pm) and repeating every 60 seconds.
- Hourly correction: 63-67 seconds starting at the 58th minute and 0 second. 12 hour correction: 14 pulses of 63-67 seconds starting at 5:06:00 (am and pm) and repeating every 2 minutes.
- *Hourly correction: 54-56 seconds starting at the 58th minute and 5th second. 12 hour correction: 12 pulses of 63-67 seconds starting at 5:05:00 (am and pm) repeating every 90 seconds.

***Note:**
When switching between these correction protocols, you must use a different correction protocol to complete the transition. The AllSync Plus clock needs to distinguish between hourly corrections before it can change correction protocols internally.

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AllSync Plus Clock Specifications

SPECIFICATIONS

- 24vac/60 Hz or 120vac/60 Hz
- Current draw: 24vac, 1 watt, .043 amps
  120vac, 3 watts, .028 amps

Maximum operating voltage: 24vac setting = 40vac
120vac setting = 150vac
Minimum operating voltage: 24vac setting = 15vac
120vac setting = 50vac

GENERAL

Types of secondary clocks compatible with AllSync Plus:

Cincinnati	WS*, *D-8, *D-10, *D-12 Series
Dukane	24SS* Series, 240* Series
Edwards	*010 & *012 Series
Faraday	2315*, 2316*, 2335*, 2336*, 2380*, 2382*, 2310*, 2320*, 2330*, 2313*, 2314*, 2333*, 1310 through 1431 Series and 2420* through 2431* Series
Honeywell	ST402A* Series
Lathem	Type SS* Series
National Time	*EX-HH and *EX-LL Series
Simplex® & IBM	77* Series, 82* Series, 2310 – 92* Series, 6310 – 92* Series

*Indicates more numbers before or after.

ORDERING INFORMATION

Part #	Description	
U45BHAA?04	10" Rd Flush, Black Sand	120vac
U45BHBA?04	10" Rd Flush, Black Sand	24vac
U55BHAA?04	12" Rd Flush, Black Sand	120vac
U55GHAA?04	12" Rd Flush, Steel Gray	120vac
U55BHBA?04	12" Rd Flush, Black Sand	24vac
U55GHBA?04	12" Rd Flush, Steel Gray	24vac
U58BHAA?04	12" Sq Flush, Black Sand	120vac
U58BHBA?04	12" Sq Flush, Black Sand	24vac
U65BHAA?04	15" Rd Flush, Black Sand	120vac
U65BHBA?04	15" Rd Flush, Black Sand	24vac

BEZEL FINISHES

Black Sand=BH
Matte finish

Steel Gray=GH
Smooth satin finish 12" round only

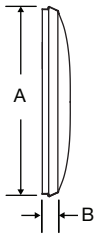
Note:

Replace the ? in the part number with the number from the list below that will correspond with the system you're replacing. New flush mount installations require backboxes.

0 = Faraday 1 = National 5 = Simplex® 6 = Cincinnati/Edwards
7 = 2-hook 8 = Setco 9 = R&H (keyhole)

For a plexiglass crystal, replace the BH or GH in the part number with BG or GG.

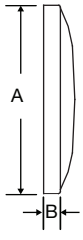
Steel flush mount



OUTSIDE DIMENSIONS
Round
"A" Dimensions:
11¼" for 10" clocks
13¼" for 12" clocks
16" for 15" clocks

"B" Dimensions:
1⅝" for 10", 12" & 15" clocks

Flush mount steel square



OUTSIDE DIMENSIONS
Square (12" only)
"A" Dimensions:
12⅝" for 12" clocks

"B" Dimensions:
1¼" for 12" clocks

At American Time, we continually strive to improve our products to meet our customers' needs and to provide the best possible value. The above specifications are believed to be correct, are subject to change without notice and may otherwise vary from the above. Please call if you need verification of any specifications or the suitability of a particular product for a particular application.

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AllSync Plus Clock Specifications

american time
Integrated Solutions

AllSync Plus®
Flush Molded Case

FEATURES

- **5 Year Warranty**
- Microprocessor controlled movement
- 15 minutes of backup power (no batteries required)
- Accuracy to within ±1 second of a master clock
- Reduced power consumption
- Attractive modern design
- Impact-resistant black plastic case
- Shatter-resistant polycarbonate crystal
- Diagnostic LED

DESCRIPTION

The **american time**™ AllSync Plus clocks are provided in **round only** high impact black plastic cases with clear polycarbonate crystals and bold, black numerals and minute markers on a non-yellowing white dial. Stylish hour and minute hands are aluminum with a black finish and a red sweep hand. Other bezel colors available. Consult factory.

AllSync Plus clocks are designed to work with multiple master clocks and correction signals. This unit is programmed to identify the signal it receives from the master and operate as that style of clock. Changing clock operation from one style to another is as easy as unplugging the clock from one system and plugging it into another. If needed, changing the placement of 2 small jumpers on the circuit board can change the voltage required to run this clock from 120vac to 24vac or 24vac to 120vac. This clock provides 15 minutes of backup run power without the use of batteries. If a power outage should last longer than 15 minutes, the clock will synchronize to the master clock at the hourly and 12 hour correction cycles.

Correction Signals

Works on:

- Hourly correction: 7-9 seconds starting at the 57th minute and 54th second. 12 hour correction: 13-18 seconds starting at 5:57:54 (am and pm).
- Hourly correction: 24-28.5 seconds starting at the 0 minute and 0 second. 12 hour correction: 24-32 minutes starting at 6:00:00 (am and pm).
- *Hourly correction: 54-56 seconds starting at the 58th minute and 5th second. 12 hour correction: 10 pulses of 94-96 seconds starting at 5:05:00 (am and pm) and repeating every 2 minutes.
- Hourly correction: 24-26 seconds starting at 0 minute and 0 second. 12 hour correction: 25 pulses of 24-26 seconds starting at 6:00:00 (am and pm) and repeating every 60 seconds.
- Hourly correction: 63-67 seconds starting at the 58th minute and 0 second. 12 hour correction: 14 pulses of 63-67 seconds starting at 5:06:00 (am and pm) and repeating every 2 minutes.
- *Hourly correction: 54-56 seconds starting at the 58th minute and 5th second. 12 hour correction: 12 pulses of 63-67 seconds starting at 5:05:00 (am and pm) repeating every 90 seconds.

***Note:**
When switching between these correction protocols, you must use a different correction protocol to complete the transition. The AllSync Plus clock needs to distinguish between hourly corrections before it can change correction protocols internally.

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AllSync Plus Clock Specifications

SPECIFICATIONS

- 24vac/60 Hz or 120vac/60 Hz
- Current draw: 24vac, 1 watt, .043 amps
  120vac, 3 watts, .028 amps

Maximum operating voltage: 24vac setting = 40vac
120vac setting = 150vac
Minimum operating voltage: 24vac setting = 15vac
120vac setting = 50vac

GENERAL

Types of secondary clocks compatible with AllSync Plus:

Cincinnati	WS*, *D-8, *D-10, *D-12 Series
Dukane	24SS* Series, 240* Series
Edwards	*010 & *012 Series
Faraday	2315*, 2316*, 2335*, 2336*, 2380*, 2382*, 2310*, 2320*, 2330*, 2313*, 2314*, 2333*, 1310 through 1431 Series and 2420* through 2431* Series
Honeywell	ST402A* Series
Lathem	Type SS* Series
National Time	*EX-HH and *EX-LL Series
Simplex® & IBM	77* Series, 82* Series, 2310 – 92* Series, 6310 – 92* Series

*Indicates more numbers before or after.

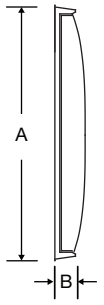
ORDERING INFORMATION

Part #	Description	
U45BAAA?04	10" Rd Flush	120vac
U45BABA?04	10" Rd Flush	24vac
U55BAAA?04	12" Rd Flush	120vac
U55BABA?04	12" Rd Flush	24vac
U65BAAA?04	15" Rd Flush	120vac
U65BABA?04	15" Rd Flush	24vac

Note:
Replace the ? in the part number with the number from the list below that will correspond with the system you're replacing. New flush mount installations require backboxes.

0 = Faraday **1 = National** **5 = Simplex®** **6 = Cincinnati/Edwards**
7 = 2-hook **8 = Setco** **9 = R&H (keyhole)**

Flush mount plastic



OUTSIDE DIMENSIONS
FLUSH MOUNT

SIZE	A	B
10"	9⅞"	1⅜"
12"	13¼"	2"
15"	16"	2"

At American Time, we continually strive to improve our products to meet our customers' needs and to provide the best possible value. The above specifications are believed to be correct, are subject to change without notice and may otherwise vary from the above. Please call if you need verification of any specifications or the suitability of a particular product for a particular application.

AllSync Plus Clock Specificatios

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Integrated Solutions

AllSync Plus®
Dual Motor
Metal Case

FEATURES

- **5 Year Warranty**
- UL/cUL Listed - 12" and 15" surface mount only
- Microprocessor controlled movement
- 15 minutes of backup power (no batteries required)
- Accuracy to within ±1 second of a master clock
- Reduced power consumption
- Attractive modern design
- Heavy-duty construction
- All metal case
- Diagnostic LED

DESCRIPTION

The **american time**™ AllSync Plus clocks are provided in round or square metal cases with glass crystals and bold, black numerals and minute markers on a non-yellowing white dial. Stylish hour and minute hands are aluminum with a black finish and a red sweep second hand.

The **american time**™ AllSync Plus clock is designed to work with multiple master clocks and correction signals. This unit is programmed to identify the signal it receives from the master and operate as that style of clock. Changing clock operation from one style to another is as easy as unplugging the clock from one system and plugging it into another. If needed, changing the placement of 2 small jumpers on the circuit board can change the voltage required to run this clock from 120vac to 24vac or 24vac to 120vac. This clock provides 15 minutes of backup run power without the use of batteries. If a power outage should last longer than 15 minutes, the clock will synchronize to the master clock at the hourly and 12 hour correction cycles.

Correction Signals

Works on:

- Hourly Correction: 28.75-35 seconds starting at the 59th minute and 30th second. 12 hour correction: 13 minutes and 52 seconds-18 minutes and 8 seconds starting at 5:12:00 (am and pm). Note: This protocol switches off the run line during the hourly correction.

ORDERING INFORMATION

Part #	Description		Part #	Description	
U45BHGA404	10" Rd Surface	120vac	U45BHHA404	10" Rd Surface	24vac
U45BHGA?04	10" Rd Flush	120vac	U45BHHA?04	10" Rd Flush	24vac
U54BHGA404	12" Rd Surface	120vac	U54BHHA404	12" Rd Surface	24vac
U55BHGA?04	12" Rd Flush	120vac	U55BHHA?04	12" Rd Flush	24vac
U57BHGA404	12" Sq Surface	120vac	U57BHHA404	12" Sq Surface	24vac
U58BHGA?04	12" Sq Flush	120vac	U58BHHA?04	12" Sq Flush	24vac
U64BHGA404	15" Rd Surface	120vac	U64BHHA404	15" Rd Surface	24vac
U65BHGA?04	15" Rd Flush	120vac	U65BHHA?04	15" Rd Flush	24vac
U53BHGA204	12" Rd Double dial wall	120vac	U53BHHA204	12" Rd Double dial wall	24vac
U52BHGA204	12" Rd Double dial ceiling	120vac	U52BHHA204	12" Rd Double dial ceiling	24vac
U51BHGA204	12" Sq Double dial wall	120vac	U51BHHA204	12" Sq Double dial wall	24vac
U50BHGA204	12" Sq Double dial ceiling	120vac	U50BHHA204	12" Sq Double dial ceiling	24vac
U63BHGA204	15" Rd Double dial wall	120vac	U63BHHA204	15" Rd Double dial wall	24vac
U62BHGA204	15" Rd Double dial ceiling	120vac	U62BHHA204	15" Rd Double dial ceiling	24vac

Note:

Replace the ? in the part number with the number from the list below that will correspond with the system you're replacing. New flush mount installations require backboxes.

0 = Faraday **1 = National** **5 = Simplex®** **6 = Cincinnati/Edwards**
7 = 2-hook **8 = Setco** **9 = R&H (keyhole)**

Also available in Steel Gray. Replace the BH in part number with GH - i.e. U54BHGA404 to U54GHGA404

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AllSync Plus Clock Specifications

SPECIFICATIONS

- 24vac/60 Hz or 120vac/60 Hz
- Current draw: Single dial:
  24vac, 1 watt, .043 amps
  120vac, 3 watts, .028 amps
  Double dial:
  24vac, 2 watt, .086 amps
  120vac, 6 watts, .056 amps

Maximum operating voltage: 24vac setting = 40vac
120vac setting = 150vac
Minimum operating voltage: 24vac setting = 15vac
120vac setting = 50vac

GENERAL

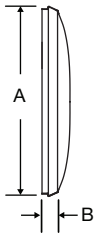
Types of secondary clocks compatible with AllSync Plus:
American Time X* Series
Standard™ Electric CR & GRC 109106 through 109155 Series and 105047 through 105066 Series
*Indicates more numbers before or after.

BEZEL FINISHES

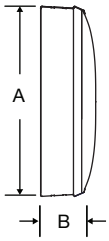
Black Sand=BH
Matte finish

Steel Gray=GH
Smooth satin finish
12" round only

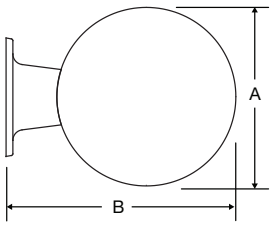
Steel flush mount



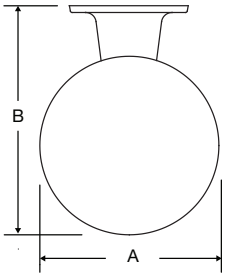
Steel surface mount



Wall mount round steel double dial



Ceiling mount round steel double dial



OUTSIDE DIMENSIONS
"A" Dimensions: Surface
11¼" for 10" clocks
13¼" for 12" clocks
16¼" for 15" clocks

"B" Dimensions: Surface
2¼" for 10", 12" & 15" clocks

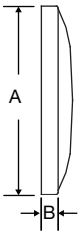
"A" Dimensions: Flush
11¼" for 10" clocks
13¼" for 12" clocks
16" for 15" clocks

"B" Dimensions: Flush
1⅝" for 10", 12" & 15" clocks

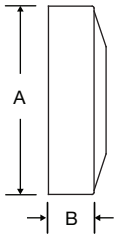
"A" Dimensions: Double dial
13¼" for 12"clocks
16¼" for 15" clocks

"B" Dimensions: Double dial
16⅞" for 12"clocks
19⅞" for 15" clocks

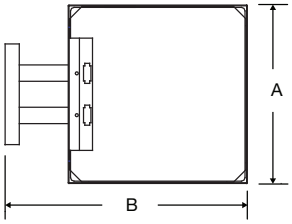
Flush mount steel square



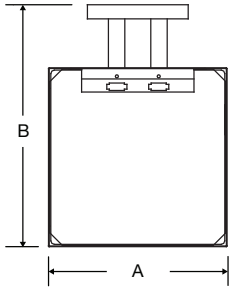
Surface mount steel square



Wall mount steel square double dial mechanical



Ceiling mount steel square double dial mechanical



OUTSIDE DIMENSIONS
Square (12" only)
"A" Dimensions: Surface
12⅝" for 12" clocks

"B" Dimensions: Surface
3¼" for 12" clocks

"A" Dimensions: Flush
12⅝" for 12" clocks

"B" Dimensions: Flush
1¼" for 12" clocks

"A" Dimensions: Double dial
12⅝" for 12" clocks

"B" Dimensions: Double dial
17⅛" for 12" clocks

Double dial mounting requires a 4" square electrical box in the wall or ceiling.

At American Time, we continually strive to improve our products to meet our customers' needs and to provide the best possible value. The above specifications are believed to be correct, are subject to change without notice and may otherwise vary from the above. Please call if you need verification of any specifications or the suitability of a particular product for a particular application.

AllSync Plus Clock Specifications

american time
Integrated Solutions

AllSync Plus® Dual Motor Molded Case

FEATURES

- **5 Year Warranty**
- UL/cUL Listed - 12" surface mount only
- Microprocessor controlled movement
- 15 minutes of backup power (no batteries required)
- Accuracy to within ±1 second of a master clock
- Reduced power consumption
- Attractive modern design
- Impact-resistant black plastic case
- Shatter-resistant safety crystal
- Diagnostic LED

DESCRIPTION

The **american time**™ AllSync Plus clocks are provided in **round only** high impact black plastic cases with clear polycarbonate crystals and bold, black numerals and minute markers on a non-yellowing white dial. Stylish hour and minute hands are aluminum with a black finish and a red sweep hand. Other bezel colors available. Consult factory.

The **american time**™ AllSync Plus clock is designed to work with multiple master clocks and correction signals. This unit is programmed to identify the signal it receives from the master and operate as that style of clock. Changing clock operation from one style to another is as easy as unplugging the clock from one system and plugging it into another. If needed, changing the placement of 2 small jumpers on the circuit board can change the voltage required to run this clock from 120vac to 24vac or 24vac to 120vac. This clock provides 15 minutes of backup run power without the use of batteries. If a power outage should last longer than 15 minutes, the clock will synchronize to the master clock at the hourly and 12 hour correction cycles.

Correction Signals

Works on:

- Hourly Correction: 28.75-35 seconds starting at the 59th minute and 30th second. 12 hour correction: 13 minutes and 52 seconds-18 minutes and 8 seconds starting at 5:12:00 (am and pm). Note: This protocol switches off the run line during the hourly correction.

ORDERING INFORMATION

Part #	Description	Part #	Description
U44BAGA904	10" Rd Surface 120vac	U44BAHA904	10" Rd Surface 24vac
U45BAGA?04	10" Rd Flush 120vac	U45BAHA?04	10" Rd Flush 24vac
U54BAGA304	12" Rd Surface 120vac	U54BAHA304	12" Rd Surface 24vac
U55BAGA?04	12" Rd Flush 120vac	U55BAHA?04	12" Rd Flush 24vac
U53BAGA204	12" Rd Double dial wall 120vac	U53BAHA204	12" Rd Double dial wall 24vac
U52BAGA204	12" Rd Double dial ceiling 120vac	U52BAHA204	12" Rd Double dial ceiling 24vac

Note:

Double dial mounting requires a 4" square electrical box in the wall or ceiling.

Surface clocks have a molded in hanger in the plastic cases.

12" surface clocks come complete with security bracket

Replace the ? in the part number with the number from the list below that will correspond with the system you're replacing.

New flush mount installations require backboxes.

0 = Faraday **1 = National** **5 = Simplex®** **6 = Cincinnati/Edwards**
7 = 2-hook **8 = Setco** **9 = R&H (keyhole)**

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AllSync Plus Clock Specifications

SPECIFICATIONS

- 24vac/60 Hz or 120vac/60 Hz
- Current draw: Single dial:
  24vac, 1 watt, .043 amps
  120vac, 3 watts, .028 amps
  Double dial:
  24vac, 2 watt, .086 amps
  120vac, 3 watts, .056 amps

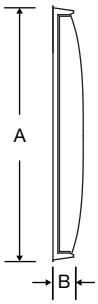
Maximum operating voltage: 24vac setting = 40vac
120vac setting = 150vac
Minimum operating voltage: 24vac setting = 15vac
120vac setting = 50vac

GENERAL

Types of secondary clocks compatible with AllSync Plus:
American Time X* Series
Standard™ Electric CR & GRC 109106 through 109155 Series and 105047 through 105066 Series
*Indicates more numbers before or after.

OUTSIDE DIMENSIONS

Flush mount plastic



Flush

SIZE	A	B
10"	9⅞"	1⅜"
12"	13¼"	2"

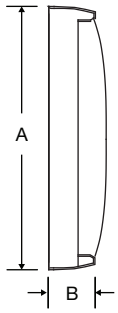
Surface

SIZE	A	B
10"	10⅜"	2½"
12"	13¼"	2½"

Double Dial

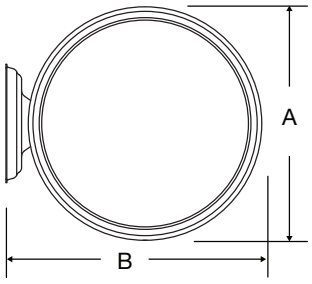
SIZE	A	B	C
12"	13¼"	15"	8⅝"

Surface mount plastic

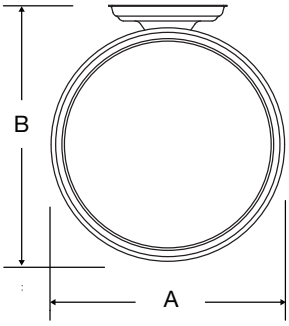


Double Dial 12" only

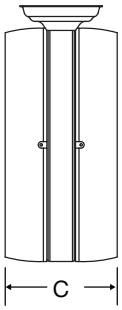
Wall mount plastic double dial



Ceiling mount plastic double dial



Plastic double dial profile



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AllSync Plus Clock Specifications

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Integrated Solutions

AllSync Plus®
Surface and Double Dial Metal Case

FEATURES

- **5 Year Warranty**
- UL Listed - 12" and 15" round, surface mount only
- Microprocessor controlled movement
- 15 minutes of backup power (no batteries required)
- Accuracy to within ±1 second of a master clock
- Reduced power consumption
- Attractive modern design
- Heavy-duty construction
- All metal case
- Diagonostic LED
- Optional plexiglass crystal available

DESCRIPTION

The **american time**™ AllSync Plus clocks, with are provided in round or square metal cases with glass crystals and bold, black numerals and minute markers on a non-yellowing white dial. Stylish hour and minute hands are aluminum with a black finish and a red sweep second hand.

The **american time**™ AllSync Plus clock is designed to work with multiple master clocks and correction signals. This unit is programmed to identify the signal it receives from the master and operate as that style of clock. Changing clock operation from one style to another is as easy as unplugging the clock from one system and plugging it into another. If needed, changing the placement of 2 small jumpers on the circuit board can change the voltage required to run this clock from 120vac to 24vac or 24vac to 120vac. This clock provides 15 minutes of backup run power without the use of batteries. If a power outage should last longer than 15 minutes, the clock will synchronize to the master clock at the hourly and 12 hour correction cycles.

Correction Signals

Works on:

- Hourly correction: 7-9 seconds starting at the 57th minute and 54th second. 12 hour correction: 13-18 seconds starting at 5:57:54 (am and pm).
- Hourly correction: 24-28.5 seconds starting at the 0 minute and 0 second. 12 hour correction: 24-32 minutes starting at 6:00:00 (am and pm).
- *Hourly correction: 54-56 seconds starting at the 58th minute and 5th second. 12 hour correction: 10 pulses of 94-96 seconds starting at 5:05:00 (am and pm) and repeating every 2 minutes.
- Hourly correction: 24-26 seconds starting at 0 minute and 0 second. 12 hour correction: 25 pulses of 24-26 seconds starting at 6:00:00 (am and pm) and repeating every 60 seconds.
- Hourly correction: 63-67 seconds starting at the 58th minute and 0 second. 12 hour correction: 14 pulses of 63-67 seconds starting at 5:06:00 (am and pm) and repeating every 2 minutes.
- *Hourly correction: 54-56 seconds starting at the 58th minute and 5th second. 12 hour correction: 12 pulses of 63-67 seconds starting at 5:05:00 (am and pm) repeating every 90 seconds.

***Note:**
When switching between these correction protocols, you must use a different correction protocol to complete the transition. The AllSync Plus clock needs to distinguish between hourly corrections before it can change correction protocols internally.

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AllSync Plus Clock Specifications

SPECIFICATIONS

- 24vac/60 Hz or 120vac/60 Hz
- Current draw: Single dial:
  24vac, 1 watt, .043 amps
  120vac, 3 watts, .028 amps
  Double dial:
  24vac, 2 watts, .086 amps
  120vac, 6 watts, .056 amps

Maximum operating voltage: 24vac setting = 40vac
110vac setting = 150vac

Minimum operating voltage: 24vac setting = 15vac
110vac setting = 50vac

BEZEL FINISHES

Black Sand=BH
Matte finish

Steel Gray=GH
12" round only
Smooth satin finish

GENERAL

Types of secondary clocks compatible with AllSync Plus:

Cincinnati	WS*, *D-8, *D-10, *D-12 Series
Dukane	24SS* Series, 240* Series
Edwards	*010 & *012 Series
Faraday	2315*, 2316*, 2335*, 2336*, 2370*, 2372*, 2380*, 2382*, 2311*, 2320*, 2331*, 2314*, 1310 through 1431 Series and 2420* through 2431* Series
Honeywell	ST402A* Series
Lathem	Type SS* Series
National Time	*EX-HH and *EX-LL Series
Simplex® & IBM	77* Series, 82* Series, 2310 – 92* Series, 6310 – 92* Series

*Indicates more numbers before or after.

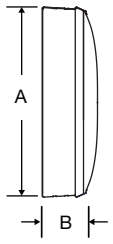
ORDERING INFORMATION

Part #	Description	
U54BHAA404	12" Rd Surface	120vac
U54BHBA404	12" Rd Surface	24vac
U57BHAA404	12" Sq Surface	120vac
U57BHBA404	12" Sq Surface	24vac
U64BHAA404	15" Rd Surface	120vac
U64BHBA404	15" Rd Surface	24vac

Notes: Replace the BH (Black Sand) in the part # with GH for a Steel Gray case. 10" & all square available in Black Sand only.
For a plexiglass crystal, replace the BH or GH in the part number with BG or GG. 10" & all square available in Black Sand only.

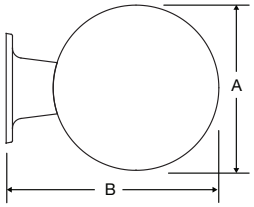
Part #	Description	
U53BHAA204	12" Rd Double dial wall	120vac
U53BHBA204	12" Rd Double dial wall	24vac
U52BHAA204	12" Rd Double dial ceiling	120vac
U52BHBA204	12" Rd Double dial ceiling	24vac
U51BHAA204	12" Sq Double dial wall	120vac
U51BHBA204	12" Sq Double dial wall	24vac
U50BHAA204	12" Sq Double dial ceiling	120vac
U50BHBA204	12" Sq Double dial ceiling	24vac
U63BHAA204	15" Rd Double dial wall	120vac
U63BHBA204	15" Rd Double dial wall	24vac
U62BHAA204	15" Rd Double dial ceiling	120vac
U62BHBA204	15" Rd Double dial ceiling	24vac

Steel surface mount

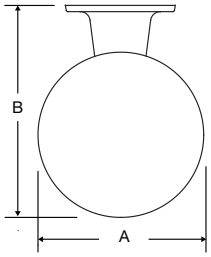


OUTSIDE DIMENSIONS
Round
"A" Dimensions:
11¼" for 10" clocks
13¼" for 12" clocks
16¼" for 15" clocks
"B" Dimensions:
2¼" for 10", 12" & 15" clocks

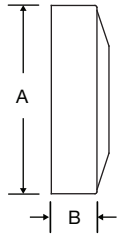
Wall mount round steel double dial



Ceiling mount round steel double dial

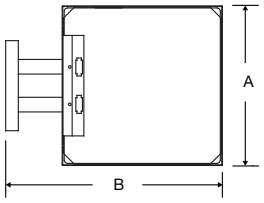


Surface mount steel square

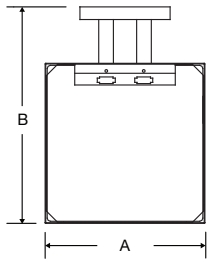


Square (12" only)
"A" Dimensions:
12⅝"
"B" Dimensions:
3¼"

Wall mount steel square double dial mechanical



Ceiling mount steel square double dial mechanical



Double dial mounting requires a 4" square electrical box in the wall or ceiling.

At American Time, we continually strive to improve our products to meet our customers' needs and to provide the best possible value. The above specifications are believed to be correct, are subject to change without notice and may otherwise vary from the above. Please call if you need verification of any specifications or the suitability of a particular product for a particular application.

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AllSync Plus Clock Specifications

american time
Integrated Solutions

AllSync Plus®
Surface and Double Dial
Molded Case

FEATURES

- **5 Year Warranty**
- UL Listed - 12" surface mount only
- Microprocessor controlled movement
- 15 minutes of backup power (no batteries required)
- Accuracy to within ±1 second of a master clock
- Reduced power consumption
- Attractive modern design
- Impact-resistant black plastic case
- Shatter-resistant polycarbonate crystal
- Diagnostic LED

DESCRIPTION

The **american time**™ AllSync Plus clocks are provided in **round only** high impact black plastic cases with clear polycarbonate crystals and bold, black numerals and minute markers on a non-yellowing white dial. Stylish hour and minute hands are aluminum with a black finish and a red sweep hand. Other bezel colors available. Consult factory.

The **american time**™ AllSync Plus clock is designed to work with multiple master clocks and correction signals. This unit is programmed to identify the signal it receives from the master and operate as that style of clock. Changing clock operation from one style to another is as easy as unplugging the clock from one system and plugging it into another. If needed, changing the placement of 2 small jumpers on the circuit board can change the voltage required to run this clock from 120vac to 24vac or 24vac to 120vac. This clock provides 15 minutes of backup run power without the use of batteries. If a power outage should last longer than 15 minutes, the clock will synchronize to the master clock at the hourly and 12 hour correction cycles.

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Simplex® & IBM	77* Series, 82* Series, 2310 – 92* Series, 6310 – 92* Series

*Indicates more numbers before or after.

ORDERING INFORMATION

Part #	Description	
U44BAAA904	10" Rd Surface	120vac
U44BABA904	10" Rd Surface	24vac
U54BAAA304	12" Rd Surface	120vac
U54BABA304	12" Rd Surface	24vac
U53BAAA204	12" Rd Double dial wall	120vac
U53BABA204	12" Rd Double dial wall	24vac
U52BAAA204	12" Rd Double dial ceiling	120vac
U52BABA204	12" Rd Double dial ceiling	24vac

Part #	Description	
U64BAAA304	15" Rd Surface	120vac
U64BABA304	15" Rd Surface	24vac
U63BAAA204	15" Rd Double dial wall	120vac
U63BABA204	15" Rd Double dial wall	24vac
U62BAAA204	15" Rd Double dial ceiling	120vac
U62BABA204	15" Rd Double dial ceiling	24vac

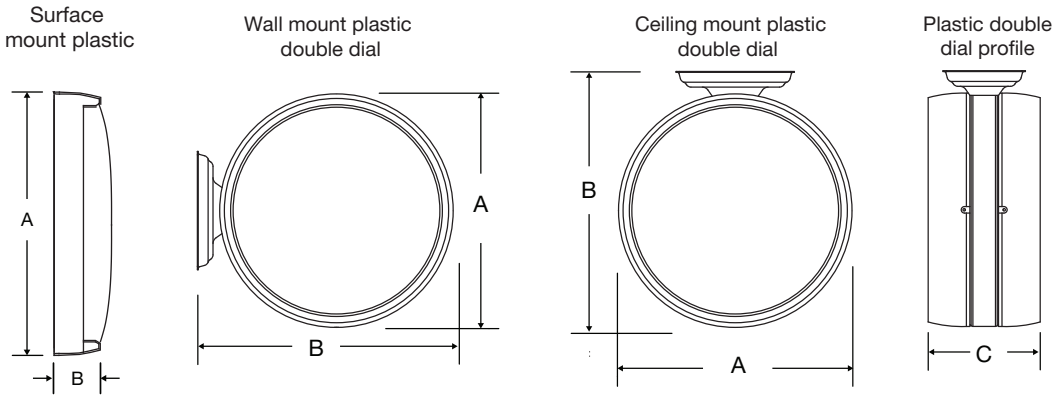
Note:
Double dial mounting requires a 4" square electrical box in the wall or ceiling. Surface clocks have a molded in hanger in the plastic case used to secure the clock to a bracket (pictured below) to a single gang electrical box.

OUTSIDE DIMENSIONS

Surface

SIZE	A	B	C
10"	10⅜"	2½"	N/A
12"	13¼"	2½"	N/A
15"	16"	2½"	N/A
Double Dial (12" & 15" only)			
12"	13¼"	15"	8⅝"
15"	16"	19¼"	8⅝"

Note: 12" surface mount clocks include security bracket.



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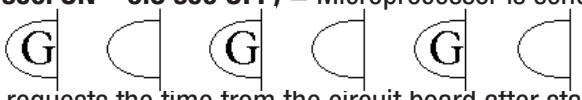
Appendix B - LED Indication

Note: LED indicator can be found on the back of the AllSync Plus clock on the side of the dust cover as indicated by the decal, or refer to picture on page 19.

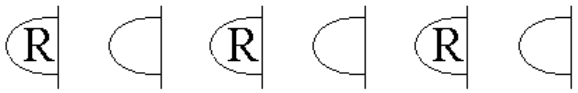
Normal Operation:

Flashing Green (0.5 sec. ON – 0.5 sec OFF) = Microprocessor is sending an update to the movement.



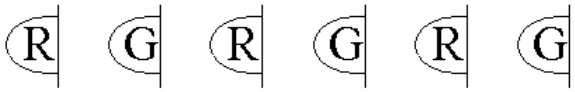
Note: The movement requests the time from the circuit board after startup and at 2am, 8am, 2pm and 8pm as seen on the clock. During this request the circuit board will send the time to the movement. Each request will last approximately 3 minutes.

Flashing Red (0.5 sec. ON – 0.5 sec OFF) = Incorrect DIP switch settings or clock error.



Note: If the LED is flashing red settings in the clock may be incorrect. Contact American Time Technical support for assistance at **800-328-8996**.

Alternating Red and Green (0.5 sec Red – 0.5 sec. Green) = AllSync Plus circuit board receiving correction signal from master.



Both colors OFF 1 sec. = At the top of each minute the AllSync Plus clock LED will turn off at the 00 sec. and continue with normal operation at 01 sec.

Note: After the clock has had sufficient time to synchronize (the LED will remain green and the movement has crossed 8:00 or 2:00 on its face) this LED flashing off should match the second hand on the clock passing the top of the minute.

Continuous Red = Power is on and the AllSync Plus circuit board has not received a 12 hour correction in last 15 hours.

Note: If the AllSync Plus clock is installed in a clock system running a correction protocol different than 01 (factory) or its previously recognized protocol, it may require more than one 12 hour correction to adjust its internal clock. In this case the LED will remain red after one 12 hour correction.

Continuous Green = Power is on and the AllSync Plus circuit board has received at least one 12 hour correction in the last 15 hours.

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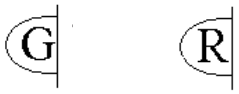
Appendix B - LED Indication

Startup diagnostics routine

1. 5 sec. – solid red only

2. 1 sec. – OFF
3. 1 sec. – Green (DIP Switch 1 ON) or Red (DIP Switch 1 OFF) 

4. 1 sec. – OFF
5. 1 sec. – Green (DIP Switch 2 ON) or Red (DIP Switch 2 OFF)

6. 1 sec. – OFF
7. 1 sec. – Green (DIP Switch 3 ON) or Red (DIP Switch 3 OFF)

8. 1 sec. – OFF
9. 1 sec. – Green (DIP Switch 4 ON) or Red (DIP Switch 4 OFF)

10. 2 sec. – OFF
11. Continue with normal operation

Note: For normal operation all DIP switches should be on or green during the startup diagnostics.

Note: If the circuit board has not received power for over 30 minutes it may cycle through the startup diagnostics several times while the power cell is charging.

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Glossary

Clock Protocol - A specific time and duration of a set of correction pulses sent from a master clock to synchronize a clock system. Through the development of clock systems many different clock system manufacturers designed their own clock protocols. For this reason clocks cannot generally move from one system to another unless the system has the same clock protocol. The AllSync Plus clock is designed to recognize many different clock protocols.

Cold Start - AllSync Plus operational state in which power is applied for the first time or after the clock has not had power for a sufficient amount of time to drain it to the point it resets its internal processor.

LED - Light Emitting Diode - Indicator light on the back of the AllSync Plus clock.

Master Clock - In a clock system, a device that acts as the source of time. The master clock transmits the time to any number of secondary (or slave) clocks.

Movement - The inner mechanism of an analog clock that moves the clock's hands.

Secondary Clock - Also known as a slave clock, this is a clock that synchronizes its timekeeping to that of a connected master clock.

Synchronization - The process of bringing two clocks or time sources into phase so their difference is zero. In the case of a timekeeping system, time synchronization takes place between the master clock and all secondary clocks.

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